



US Army Corps

of Engineers

Engineer Research and
Development Center

News Release

Release No.01-05

Contact: PUBLIC AFFAIRS OFFICE

For Release: Immediately

Phone: (703) 428-3736

Topographic Engineering Center • 7701 Telegraph Road • Alexandria, VA 22315-3864 • <http://www.erdc.usace.army.mil>

CORPSCON VERSION 6.X SOFTWARE RELEASED

FORT BELVOIR, Va. - The U.S. Army Engineer Research and Development Center's (ERDC) Topographic Engineering Center (TEC) released Corpscon Version 6.x, a software product that extends the usability of existing survey data and saves users the time and costs associated with more labor intensive data conversion or resampling. For the last 16 years, Corpscon has become the industry standard for coordinate and datum conversions within the United States.

Corpscon 6.x improves on older versions by allowing flexibility for new and future Geoid models, Nadcon files and Vertcon files. It operates in a Microsoft Windows environment and was created to be a user-friendly tool, according to Jim Garster, Corpscon program coordinator.

Geospatial data is gathered from different sources, agencies and historical archives, and is often collected in different coordinate systems or datums. The data is then converted into common forms for easy use. Corpscon provides consistent conversions between various coordinate systems and datums used in the Untied States, Puerto Rico and the United States Virgin Islands.

"Corpscon first emerged about 16 years ago with the creation of the North American Datum 1983," Garster said. "The Corps of Engineers needed a consistent method of transforming its existing data to this new datum." Corpscon conforms to the federal standard for datum conversions. The original program was DOS-based, but has evolved to its current Windows environment.

Though Corpscon is a Corps of Engineers product, it is available to the public at no cost and may be downloaded from the TEC website at <http://crunch.tec.army.mil/software/corpscon/corpscon.html>.

Because of restricted resources, support for Corpscon is limited outside the Corps of Engineers. General questions are addressed on a Frequently Asked Questions page, located at <http://crunch.tec.army.mil/software/Corpscon5/CorpsconFAQs.htm>. Submitted questions are answered as time permits, but responses cannot be guaranteed outside the Corps.

-END -

Background

The National Geodetic Survey developed programs called Nadcon (North American Datum Conversion), Vertcon (Vertical Conversion) and GeoidXX (Geoid99/Geoid03).

Nadcon provides consistent results when converting to and from the North American Datum of 1983, 1986 Adjustment (NAD83/86), NAD83 High Precision Geodetic Networks (HPGN) or High Accuracy Reference Networks (HARN) (NAD83(YY)) HARN, and the North American Datum of 1927 (NAD27). The YY refers to the year the adjustment was performed. Nadcon converts coordinates between NAD83 and the following datums; NAD83 HARN, NAD27, Old Hawaiian Datum, Puerto Rico Datum, St. George Island (Alaska) Datum, St. Paul Island (Alaska) Datum and St. Lawrence Island (Alaska) Datum. For organizational purposes, the latter six datums are referred to as NAD27 within the program. Vertcon converts orthometric heights between National Geodetic Vertical Datum of 1929 (NGVD29) and North American Vertical Datum of 1988 (NAVD88). GeoidXX (Geoid99/Geoid03) calculates the separation between the Geoid and the Geodetic Reference System of 1980 (GRS80) ellipsoid. Nadcon, Vertcon, and GeoidXX (Geoid99/Geoid03) work exclusively in geographical coordinates (Latitude/Longitude). For information on the accuracies of Vertcon refer to Appendix A. For more information on the accuracies of GeoidXX (Geoid99/Geoid03) refer to Appendix B.

The U.S. Army Topographic Engineering Center (TEC) created a more comprehensive program called Corpscon (Corps Convert), which is based on Nadcon, Vertcon and GeoidXX (Geoid99/Geoid03). In addition to transformations between NAD83(86), NAD83(YY) HARN, and NAD27 geographical coordinates, Corpscon also converts between State Plane Coordinates Systems (SPCS), Universal Transverse Mercator (UTM), US National Grid (USNG), and geographical coordinates; thus eliminating several steps in the total process of converting between SPCS27, SPCS83, UTM27, UTM83, and USNG. Inputs can be in either geographic or SPCS/UTM coordinates (SPCS27 X and Y or SPCS83 Northing and Easting). This program can also be used to convert between state plane, geographic, UTM, and USNG coordinates on the same datum. Corpscon will convert orthometric and ellipsoidal heights in Geographic, State Plane, UTM, and USNG coordinate systems.

Corpscon allows conversions based on U.S. Survey and International Feet. As of 1997, 19 states have specified, by statute, units of measure for grid coordinates as follows:
U.S. Survey Foot - California, Colorado, Connecticut, Idaho, Indiana, Kentucky, Maryland, Massachusetts, Mississippi, New Mexico, New York, North Carolina, Oklahoma, Pennsylvania, Tennessee, Texas, Washington and Wisconsin.
International Survey Foot - Arizona, Michigan, Montana, North Dakota, Oregon, South Carolina and Utah.

The Federal Geodetic Control Subcommittee (FGCS) has adopted NAD83 as the official horizontal datum for U.S. surveying and mapping activities performed or financed by the Federal Government ([Federal Register / Vol. 54, No. 113, June 14, 1989, www.ngs.noaa.gov/PUBS_LIB/FedRegister/FRdoc90-18809.pdf](#)). The FGCS also stated that Nadcon will be the standard conversion method for all mathematical transformations between NAD83 and NAD27. FGCS has affirmed that NAVD88 shall be the official vertical reference datum for the United States ([Federal Register / Vol. 58, No. 120, June 24, 1993, www.ngs.noaa.gov/PUBS_LIB/FedRegister/FRdoc93-14922.pdf](#)).

Coverage

The current version performs NAD27/NAD83/HARN and NAVD88/GRS80 conversions for the continental United States (CONUS), including the 200 mile commercial zone, Alaska, Hawaii, Puerto Rico, and the U.S. Virgin Islands. Current areas of coverage for HARNs are all of the continental United States except Alaska, North Carolina, and South Carolina. The current version performs NGVD29/NAVD88 conversions for the continental United States only.

Changes between version 5.x and 6.x

There were several changes made to the version 6.x of Corpscon to allow flexibility for new and future Geoid models, Nadcon files, and Vertcon files. A summary of changes are as follows:

- Selection of Geoid model used for conversion
- Selection of custom Vertcon or Geoid files (if available)
- Conversion to/from National Grid Reference System (NGRS)
- Increased number of fields for User Defined files
- Accuracy statement of conversions
- Redesigned interface
- Help for selecting correct State Plane and UTM zones
- Dynamic Link Libraries (dll) for inclusion in other software
- Improved documentation and user's manual